National Cervical Cancer Mortality Data Transcript

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SUSAN DEVESA: Good morning. It's really a pleasure to see everyone here. As I think most of you are aware, we came out in December of 1999 with a new Atlas of Cancer Mortality in the United States, which presented data for 40 cancers. And many cancers, I think, our hope of improving. The plight of the American public is to reduce exposure to the carcinogens, get better access to treatment that are diagnosis and hopefully reduce mortality. And as Jon said, cervical cancer is one opportunity where we really know, more, I think, than with any other cancer, about how to prevent the final outcome mortality in this country. And to reiterate again, no woman should die of cervical cancer mortality in this country.

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Jon just showed this map, which presents the cervical cancer mortality among white women in this country for 49 years worth. And he also showed that geographic patterns have remained amazingly constant over time in the light great reductions in mortality across the country. But there remain certain areas where white women still continue to be at elevated risk of dying of cervical cancer, and I think this is where we need to focus our efforts. The red areas, which are the areas with the highest mortality rates, stretch from upper New England down through Appalachia, the middle Atlantic, down all the way through Texas. I would also like to point out that there are many areas of the country which are blue. In those areas, cervical cancer mortality are relatively low among white women, and perhaps we could look there as well to try and find out what are they doing that is not being done in these other areas with elevated mortality. This is for white women, and you will notice that the national rate is 4.64. Actually, this is for the 49-year time period, so it's not quite

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comparable. But even in the recent 29-year time period, 1970 through 1998, rates among black women were still twice those among white women, 8.04 in this particular map. Now the maps for blacks, as you flip through the atlas, have large areas of grey. Sparse data. Well, if you know anything about the population distribution in this country, there are large areas of the country where are there are no blacks. And so, even though there might have been a few deaths in those areas, we wanted to color those areas grey, because the rates are highly unstable. But there are certain areas of the country where there are substantial black populations, and within those areas, we see that there is geographic variation in their cervical cancer mortality rates, with, as Jon pointed out, elevated rates down along the East Coast and across the South particularly. Again, notably, as I'd like to point out, that among black women out west, the rates are low. What are they doing out there that we're not doing in other areas of the country? Or is there any selective migration among those black women who move to the rural South out to the West Coast?

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Both of the maps that I just showed presented data for state economic areas, of which there are about 508. These are individual counties or groups of counties which are relatively similar with respect to demographic, cultural, and other economic characteristics. But when we look at the more than 3,000 counties within the United States, which are a little more understandable to the general public. One thing we see is a little bit more speckling because the rates are variable, more grey because we've partitioned the data, but still, within the white women, we see counties with elevated rates in the northern New England area, stretching down into Appalachia and across the

South. And generally low rates across the upper plains and the Rocky Mountain areas.

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Now when we were trying to think: Well, what can we learn more about these counties, we decided to contrast the counties with the highest -- in the highest 20% of rates, versus the rest of the country. And it's sort of looked -- when we looked at the maps, that there might be some kind of an urban-rural gradient. Wondering whether maybe women in rural areas had less access to care, poorer outcomes, and therefore, higher mortality rates. So in this map, the first three colors on the left, those being yellow, red, and orange are for those areas that have the highest cervical cancer mortality rates. And they've been partitioned into yellow for urban areas. And we see that there are very few yellow counties on this map. Very few counties in the top 20 percent that are also urban. The suburban counties are colored orange. There are a number of those. But we see that a lot of the rural counties in the top 20 percent -- the red ones -- there are a lot of red counties in this particular map. Looking at the remaining 80% of the counties, counties not in top 20 percent -- we've partitioned them into purple and blue. And we see that there are both urban, rural, and suburban counties across the board. So there appears to be some urban-rural gradient, but it is not as persuasive as we might have thought.

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This is the map at the county level for black women. And here you see that we have many more counties with Sparse data. We've cut the counties from the SEAs. But again, we see generally the pattern of elevated rates, red counties, down the east Coast and across the South.

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This map we've done a similar exercise to what we just did for the white women. Where we've taken the counties with the top 20 percent, the highest 20 percent mortality rates, and partitioned them into urban and rural. And it's pretty hard to see this, isn't it? But again, there are several counties that are urban, a number that are suburban, and quite a few that are rural. But again, there are some suggestions of urban-rural gradient, but it's not the whole story. Now we know from analytic studies of cervical cancer for many years that risks of both being diagnosed and dying from cervical cancer is related to socioeconomic status, income, and education. This may be directly related to risk

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of exposures or to access to care. Now this shows for all races combined, using data from the 1980 census -- median years of school by county. And we've partitioned these into quintiles, in other words, the bright red is the top 20. Actually, in this case, it's the counties with the least years of education, up to the white counties have the highest levels of education. So, because the socioeconomic gradient is inverse, we've tried to color these maps in a somewhat similar fashion to the cervical cancer mortality maps. But we're just using red/white rather than the red through the blue. And we see that counties with the lowest level of education seem to occur in the southeast quadrant of the country, with some speckling -- it's not universal. But generally, there are many more counties with lower levels of education in the southeast compared to other areas of the country. And in particular, the Plains and the Rocky Mountain states seem to have counties with elevate -- with higher educational achievements. So this follows some of the cervical cancer maps.

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Then a researcher at NCI, a doctor Ghopal Singh has been working on developing a composite score, using various measures of socioeconomic status including income, education, percent below poverty, housing values, rental values 3/4 a number of indicators, 13 of them 3/4 and putting them into a composite score using some fancy statistical techniques. And this presents the data by county. Again, with those counties

having the lowest measures of these various socioeconomic indicators being colored red, and the white being the higher SES counties. And again, we see, across the South and Appalachian regions across into Texas, mirroring fairly well the cervical cancer mortality rates among both black and white women, I think. So this suggests that showing geographically, the variation in the socioeconomic status parallels to a large extent the cervical cancer mortality rates.

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We tried to actually quantify this somewhat. And we used the cervical cancer mortality rates, in this case among white women, and correlated them with various measure of the socioeconomic variables from the 1980 census, being the approximate mid-point in the time period that we were looking at. And we see that smallest co-efficient -- first, they are all highly significant 3/4 all the P values are less than highly significant. But the smallest co-efficient is that for percent with Spanish surname. Although it is a highly significant correlation co-efficient of about .09. The next smallest co-efficient is for percent urban, with an inverse gradient of about .19. And then percent below poverty and percent unemployed each have correlation co-efficients of about .3. And the largest is for median years of education, with an inverse grading of about .4. Since I made this slide, since we got Ghopal's SES index score. We also correlated that measure with the cervical cancer mortality rates, and that, plus the correlation co-efficient, was even stronger 3/4 about -.43. These are all weighted correlation co-efficients. When you use an unweighted, the coefficients are somewhat smaller. So this takes into account the varying population sizes. It's a better measure, we think. So each of these variables are associated with cervical cancer mortality, but obviously, it's not low income or low education per se. These variables are indicating other factors that may be influencing risk or access to care, access to treatment, follow-up, adherence to recommendations, and finally, cervical cancer mortality.

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So, in summary then, counties with these various variables, populations with more poverty and lower education have higher cervical cancer mortality rates. And different racial ethnic populations vary in their risk of cervical cancer. And both population characteristics and social conditions may contribute to higher cervical cancer mortality rates. Thank you.